LOUISIANA TECHNOLOGY INNOVATIONS FUND – FINAL REPORT

DECEMBER 2001

I. DEPARTMENT/AGENCY

Department of Health and Hospitals /
Office for Citizens with Developmental Disabilities (OCDD)

II. PROJECT TITLE

OCDD Specialty Telemedicine Partnership

III. PROJECT LEADER

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IV. DESCRIPTION OF THE PROJECT

This is a project intended for the provision of specialty medical care for residents of the state's developmental centers operated by the Office for Citizens with Developmental Disabilities (OCDD) within the Department of Health and Hospitals (DHH). It entails a telemedicine partnership between OCDD and expertise wherever it exists, such as LSU Medical Center, by way of an interactive, multi-functional data/voice/video network. Utilizing standards-based, interoperable, state-of-the-art telecommunications technology, OCDD can access medical consults, clinics, and education in specialties related to developmental disabilities for the care of its residential clients. Further, under the concept of community capacity building, the developmental centers can share this knowledge with local practitioners and partners to advance the quality of medical care throughout the state.

V. POST IMPLEMENTATION REVIEW AND ASSESSMENT

A. EXECUTIVE SUMMARY OF FINDINGS

Telemedicine holds promise for this department in at least two respects: it can enable cost-effective education and utilization of skilled medical providers, and it can access specialized medical expertise not readily available. This project has demonstrated the viability

of telemedicine technology. Further, it has demonstrated the technology's versatility by yielding efficiencies in routine operations, such as facilitating communication and reducing travel. The department will continue to develop telemedicine protocols, extend the benefits of telemedicine to DHH offices beyond OCDD, and to explore telemedicine partnerships with other agencies. For DHH, the award from the Louisiana Technology Innovations Fund has indeed achieved its stated purpose of serving as "seed" money for the advancement of electronic government.

B. ACCOMPLISHMENTS AND BEST PRACTICES IDENTIFIED

Built a telemedicine network capable of interconnecting with the state's other compressed video systems.
Best Practice: dialogue with the Office of Telecommunications Management and agencies involved with compressed video to assure system compatibility.

Designed the telemedicine system to support compressed video on both ISDN (H.320 standard) and IP (H.323 standard) networks.
Best Practice: because the industry is moving toward video by IP, design a scalable system that can accommodate both standards.

Achieved quality telemedicine while sharing bandwidth with data applications, thereby maximizing the capacity of the telecommunications infrastructure.
Best Practice: configure the compressed video network to run on varying bandwidths (fractional T1) depending on nature of the event and the voice/video quality required.

Gained experience with the emerging trend of video by IP, and committed to develop the capabilities of the H.323 standard.
Best Practice: invest resources in H.323 systems cautiously and incrementally, testing network performance each step of the way.

By integrating our own MCU, eliminated the services of an outside video bridge and the associated costs.
Best Practice: calculate the cost effectiveness of procuring an MCU.

Achieved the network security essential to telemedical confidentiality, even when engaging external sites.
Best Practice: assure that the technology satisfies legal and operational requirements.

Produced hundreds of telemedicine events that achieved satisfactory or better results, while minimizing participants' travel and time away from work.
Best Practice: scrutinize medical, educational, and administrative activities for their adaptability to interactive video.

Discovered the applicability of telemedicine to DHH offices other than OCDD, particularly the Office of Public Health and the Office of Mental Health.

Best Practice: seek optimum utilization of the technology to realize the broadest range of departmental objectives.

Established partnerships with educational institutions and the state's Comprehensive Public Training Program to offer opportunities for professional education.
Best Practice: explore win-win relationships with other agencies that can expand and extend their services to the department through compressed video.

C. BENEFITS ACHIEVED/EXPECTED

Improved the ability to communicate and interact within the department and state government, as well as to manage the need to travel. The department can deliver timely and consistent messages simultaneously around the state.

Able to achieve better care in the developmental centers by allowing clients to remain in familiar surroundings through telemedical encounters.

Made specialized medical care available to residents of the developmental centers. Addressed concerns of the U.S. Department of Justice related to the quality of care provided to citizens with developmental disabilities residing at the developmental centers.

Made specialized medical education and training available to staff at the developmental centers, especially in remote areas.

Gained efficiencies in the telecommunications infrastructure by searching for the bandwidth necessary to support telemedicine. Tests of the H.323 standard, in particular, revealed points of bandwidth loss and degradation in existing networks.

Expect in time to implement video by IP, thereby delivering telemedicine to the desktops of employees statewide.

D. PITFALLS ENCOUNTERED

The potential for lack of coordination in the design, procurement, and deployment of telemedicine systems among departmental units and project partners.

Difficult decisions about the allocation of scarce IT resources—fiscal, material, and personnel—to support compressed video.

Necessary upgrades to LAN's and WAN's to integrate video with data, especially IP networks.

Problems with interoperability of compressed video components, especially with older equipment.

Adequately training end users in equipment operation and procedures.

Formalizing the scheduling process to ensure coordinated utilization.

Resistance to the changes wrought by telemedicine and compressed video; at the same time, controlling enthusiasm for the new medium to manage its use appropriately.

The hazards and frustrations of venturing into uncharted territory of video by IP under the nascent H.323 standard.

E. RECOMMENDATIONS TO AGENCIES PLANNING TO USE THIS TECHNOLOGY

Develop internal expertise in compressed video, in both the technical and production aspects, to interface with agency counterparts, partners, and vendors.

Mandate centralized, departmental control of telecommunications acquisitions to assure the growth of a coherent telemedicine network. Rogue equipment will create fragmented networks that undermine the value of interconnectivity.

Prepare to enhance the bandwidth capabilities of WAN's prior to implementation of a telemedicine network.

Procure an MCU to facilitate management of the telemedicine network.

Set CSU/DSU's to line clocking, not internal clocking, to optimize transmission quality.

Use 10/100 MB switches, at a minimum, for video.

Especially for H.323 applications, upgrade networks to fiber to mitigate distance restrictions.

VI. FINAL COST VS. BUDGET

	Category	Budgeted	Actual	Surplus*
F.	Equipment	733,792	799,515	(-65,723)
G.	Software	0	0	0
H.	Telecommunications	170,250	95,645	74,605
I.	Professional/Contract Services	52,940	0**	52,940
J.	Other Costs (borne by DHH)	55,000	78,002	(-23,002)
	Total Project Cost	$1,011,982	$973,162	$38,820

*Of the $956,982 LTIF award, DHH spent $895,160 by controlling expenses, saving the fund $61,822. The department increased its contribution to other costs, such as IT upgrades and site improvements. The project was completed under budget.

**Warranties were invoiced with equipment, obviating the need for professional/contract services to cover maintenance and repair.

VII. ITEMIZED LIST OF PROJECT EXPENSES

Description	*Unit Cost*	*Quantity*	*Total Cost*
EQUIPMENT			
Viewstation V.35 w/ warranty	$13,989	10	$139,890
Viewstation w/ warranty & training pkg	14,399	1	14,399
Viewstation for H.323	7594	6	45,564
Viewstation cable	189	17	3213
27 inch display monitor	882	20	17,640
Audiovisual cart	667	20	13,340
Standalone display monitor	657	2	1314
Monitor cart	1195	2	2390
Scan converter	1817	11	19,987
4 head video cassette recorder	455	11	5005
High resolution video visualizer	1295	10	12,950
Document camera	3220	1	3220
Medical exam camera	4713	10	47,130
Microphone	480	1	480
MCU w/ warranty & upgrade	354,708	1	354,708
MADG w/ warranty	66,081	1	66,081
Polycom management system	237	25	5925
VS4000 Codec	18,698	1	18,698
CSU/DSU w/ accessories	1622.44	17	27,581
TELECOMMUNICATIONS			
Installation of T1 transmission lines	1042	4	4168
Installation of remote site transmission lines	125	9	1125
Installation of backbone circuits	250	4	1000
Avg monthly network lines and services	3723	24	89,352
TOTAL LTIF EXPENSES			$895,160